

NON emissions must be followed by at least three minutes of A3X emission.

(i) ELTs manufactured on or after October 1, 1988, must have a clearly defined carrier frequency distinct from the modulation sidebands for the mandatory emission, A3X, and, if used, the A3E or NON emissions. On 121.500 MHz at least thirty per cent of the total power emitted during any transmission cycle with or without modulation must be contained within plus or minus 30 Hz of the carrier frequency. On 243.000 MHz at least thirty percent of the total power emitted during any transmission cycle with or without modulation must be contained within plus or minus 60 Hz of the carrier frequency. Additionally, if the type of emission is changed during transmission, the carrier frequency must not shift more than plus or minus 30 Hz on 121.500 MHz and not more than plus or minus 60 Hz on 243.000 MHz. The long term stability of the carrier frequency must comply with the requirements in § 87.133 of this part.

(j) Transmitters used at Aircraft earth stations must employ BPSK for transmission rates up to and including 2400 bits per second, and QPSK for higher rates.

[53 FR 28940, Aug. 1, 1988, as amended at 54 FR 11721, Mar. 22, 1989; 56 FR 11518, Mar. 19, 1991; 57 FR 45749, Oct. 5, 1992]

**§ 87.143 Transmitter control requirements.**

(a) Each transmitter must be installed so that it is not accessible to, or capable of being operated by persons other than those authorized by the licensee.

(b) Each station must be provided with a control point at the location of the transmitting equipment, unless otherwise specifically authorized. Except for aeronautical enroute stations governed by paragraph (e) of this section, a control point is the location at which the radio operator is stationed. It is the position at which the transmitter(s) can immediately be turned off.

(c) Applicants for additional control points at aeronautical advisory (unicom) stations must specify the location of each proposed control point.

(d) Except for aeronautical enroute stations governed by paragraph (f) of

this section, the control point must have the following facilities installed:

(1) A device that indicates when the transmitter is radiating or when the transmitter control circuits have been switched on. This requirement does not apply to aircraft stations;

(2) Aurally monitoring of all transmissions originating at dispatch points;

(3) A way to disconnect dispatch points from the transmitter; and

(4) A way to turn off the transmitter.

(e) A dispatch point is an operating position subordinate to the control point. Dispatch points may be installed without authorization from the Commission, and dispatch point operators are not required to be licensed.

(f) In the aeronautical enroute service, the control point for an automatically controlled enroute station is the computer facility which controls the transmitter. Any computer controlled transmitter must be equipped to automatically shut down after 3 minutes of continuous transmission of an unmodulated carrier.

**§ 87.145 Acceptability of transmitters for licensing.**

(a) The Commission publishes a list of type approved and type accepted equipment entitled "Radio Equipment List—Equipment Acceptable for Licensing." Copies of this list are available for inspection at any of the Commission's offices.

(b) Each transmitter must be type accepted for use in these services, except as listed in paragraph (d) of this section. However, aircraft stations which transmit on maritime mobile frequencies must use transmitters type accepted for use in ship stations in accordance with part 80 of this chapter. Type acceptance under part 80 is not required for aircraft earth stations transmitting on maritime mobile-satellite frequencies. Such stations must be type accepted under part 87.

(c) Some radio equipment installed on air carrier aircraft must meet the requirements of the Commission and the requirements of the FAA. The FAA requirements may be obtained from the FAA, Aircraft Maintenance Division, 800 Independence Ave., SW., Washington, DC 20591.

(d) The equipment listed below is exempted from type acceptance. The operation of transmitters which have not been type accepted must not result in harmful interference due to the failure of those transmitters to comply with technical standards of this subpart.

(1) Development or Civil Air Patrol transmitters.

(2) Flight test station transmitters for limited periods where justified.

(3) U.S. Government transmitters furnished in the performance of a U.S. Government contract if the use of type accepted equipment would increase the cost of the contract or if the transmitter will be incorporated in the finished product. However, such equipment must meet the technical standards contained in this subpart.

(4) ELTs notified in accordance with § 87.147(e).

(5) Signal generators when used as radionavigation land test stations (MTF).

(e) Aircraft earth stations must correct their transmit frequencies for Doppler effect relative to the satellite. The transmitted signal may not deviate more than 335 Hz from the desired transmit frequency. (This is a root sum square error which assumes zero error for the received ground earth station signal and includes the AES transmit/receive frequency reference error and the AES automatic frequency control residual errors.) The applicant must attest that the equipment provides adequate Doppler effect compensation and where applicable, that measurements have been made that demonstrate compliance. Submission of data demonstrating compliance is not required unless requested by the Commission.

[53 FR 28940, Aug. 1, 1988, as amended at 57 FR 45750, Oct. 5, 1992; 58 FR 30127, May 26, 1993; 58 FR 67695, Dec. 22, 1993]

#### **§ 87.147 Authorization of equipment.**

(a) Type acceptance or notification may be requested by following the type acceptance or notification procedures in part 2 of this chapter. Aircraft transmitters must meet the requirements over an ambient temperature range of -20 degrees to +50 degrees Celsius.

(b) ELTs manufactured after October 1, 1988, must meet the output power

characteristics contained in § 87.141(i) when tested in accordance with the Signal Enhancement Test contained in subpart N, part 2 of this chapter. A report of the measurements must be submitted with each application for type acceptance. ELTs that meet the output power characteristics of the section must have a permanent label prominently displayed on the outer casing state, "Meets FCC Rule for improved satellite detection." This label, however, must not be placed on the equipment without authorization to do so by the Commission. Application for such authorization may be made either by submission of a new application for type acceptance accompanied by the required fee and all information and test data required by parts 2 and 87 of this chapter or, for ELTs type accepted prior to October 1, 1988, a letter requesting such authorization, including appropriate test data and a showing that all units produced under the original type acceptance authorization comply with the requirements of this paragraph without change to the original circuitry.

(c) An applicant for a station license may request type acceptance for an individual transmitter by following the type acceptance procedure in part 2 of this chapter. Such a transmitter will be individually type accepted and so noted on the station license, but will not generally be included in the Commission's "Radio Equipment List—Equipment Acceptable for Licensing".

(d) An applicant for type acceptance of equipment intended for transmission in any of the frequency bands listed in paragraph (d)(3) of this section must notify the FAA of the filing of a type acceptance application. The letter of notification must be mailed to: FAA, Spectrum Engineering Division, 800 Independence Ave. SW., Washington, DC 20591 no later than the date of filing of the application with the Commission.

(1) The notification must describe the equipment, give the manufacturer's identification, antenna characteristics, rated output power, emission type and characteristics, the frequency or frequencies of operation, and essential receiver characteristics if protection is required.